FY98 AVIATION SAFETY REPORT

The purpose of the Annual Aviation Safety Report is to inform and raise the awareness of Coast Guard aircrews regarding aviation mishaps. Improving safety awareness is essential to improving operational performance and preventing aviation mishaps in the future. All aviation personnel are encouraged to share their ideas and suggestions to improve Coast Guard aviation safety. Your ideas and suggestions are valuable, please pass them to your unit Flight Safety Officer (FSO) or contact the Aviation Staff at HQ. This report contains Fiscal Year 1998 mishap information. Prior year data is included for comparison and historical perspective. We hope that everyone can use this report to evaluate our aviation mishap experience and become involved in mishap prevention.

ANNUAL RECAP

Coast Guard aviation had no Class A flight mishaps and only one Class B flight mishap in FY98. The last time we had a zero Class A mishap rate was FY86. CG Auxiliary Aviation reported no mishaps in FY98. (Auxiliary flight hours and mishaps do not count towards the CG mishap rates). Table 1 displays mishap class definitions.

We must be careful not to become complacent or allow a false sense of security to develop as a result of not having any major mishaps or serious incidents. Mishaps ran the gamut from ones that should not have happen to ones that could have been fatal. Remember, complacency will reduce effectiveness, and if not corrected, complacency can kill. It can happen to an organization or to an individual. When we get too comfortable, the risk of mishaps occurring increases.

MISHAP CLASS COST BREAKDOWN

Class A	$1,000,000 or greater or death
Class B	$200,000 to $999,999 or serious injury
Class C	$10,000 to $199,999 or minor injury
Class D	less than $10,000

Table 1

Flight mishap costs for FY98 were $2,935,665, the lowest since the early 80's. One reason for the low mishap costs was the absence of Class A mishaps. Total mishap costs (flight, flight-related and ground) for FY98 was $5,170,400. The last time total mishap costs were less than five million dollars was FY86 -- the last time we had a zero Class A mishap rate. Table 2 displays FY98 summary mishap data. There were forty-six ground and twenty-three flight-related incidents reported in FY98.

"0" MISHAP RATE

Our good record stems from our improved team effort. We must continue to stress safety, standardization, professionalism and risk management in the prosecution of our daily missions, otherwise we can not expect our present safety record to continue. If we are to

FY98 TOTAL MISHAPS		FLIGHT HRS =		112,510
	FLIGHT	FLT-REL	GROUND	TOTAL
CLASS A MISHAPS	0	0	0	0
CLASS A COST	$0	$0	$0	$0
CLASS A RATE	0.00	0.00	n/a	0.00
TOTAL MISHAPS	264	23	46	333
TOTAL COST	$2,935,665	$1,811,041	$423,694	$5,170,400
TOTAL RATE	0.23	0.02	n/a	0.30
COST/MISHAP	$11,120	$78,741	$9,211	$15,527
A/B/C MISHAPS	55	8	10	73
A/B/C COST	$2,490,044	$1,805,182	$372,955	$4,668,181
A/B/C RATE	0.05	0.01	n/a	0.06
COST/MISHAP	$45,274	$225,648	$37,296	$63,948

Table 2

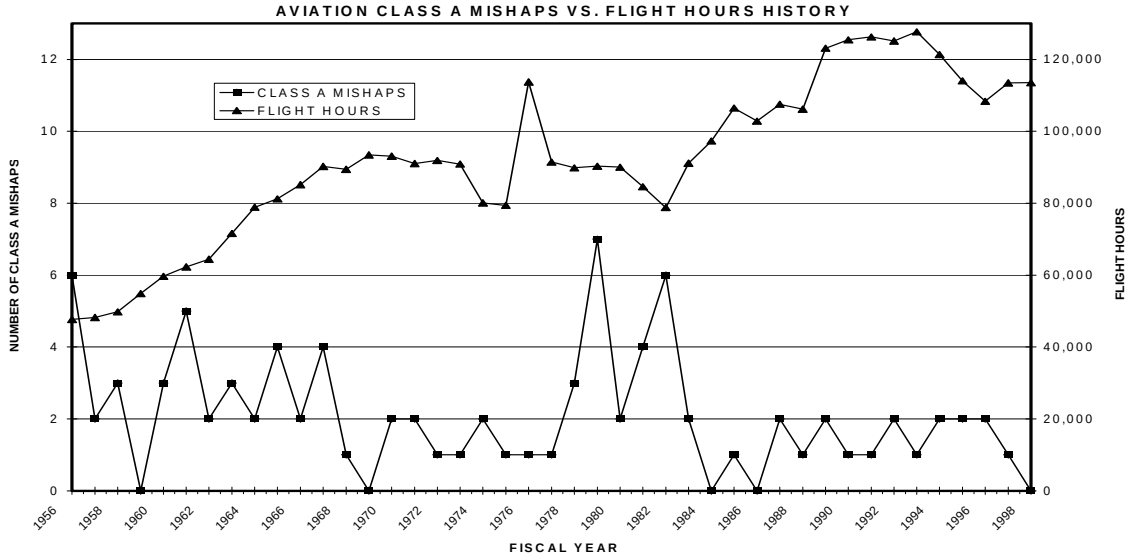


Figure 1

maintain our good safety record, we must significantly increase the efforts to determine and understand the reasons why people behave, act, or respond in the ways they do. It is inherent that as long as humans fly there will be mishaps. We must strive to keep these mishaps to a minimum. This is where each and every one of you can contribute by doing things the way they are suppose to be done.

The slogan, "Safety is everybody's business", means that everybody should be aware of the consequences of their and other people's mistakes and strive to avoid them. Everyone involved in an operation, from mission planning to mission debrief has a responsibility. It does not matter at what level. The smallest matter or the smallest detail not completed properly can have the most disastrous effects. Each one of us has a part to do and your part is not insignificant. You are a member of a team where everyone plays an extremely important part.

Safety is a subject that deserves more than just passing attention. Safety must be a part day to day operations, a theme continually repeated and reinforced by every member of the unit. Actions do speak louder than words. That is why safety is a soapbox issue, talking about safety keeps it in the limelight and ingrains safety awareness into the culture of the Coast Guard.

Safety and risk management are becoming interchangeable. We in safety like to think of risk management as a powerful tool within the safety program. Whether using the logical flow of a risk management model to minimize risks or remembering one of the many safety program tidbits, the desired goal is the same—zero mishaps!

CLASS A MISHAP RATE = Number of Class A Mishaps X 100,000

Flight Hours

Each one of us is responsible for ensuring that we drive risk out of the operations we perform, both on and off duty. Whether you are injured (or killed) on the job, in the back yard or on a family vacation, your loss is felt by everyone—by your family, the CG family and your unit.

CLASS 'A' MISHAP REVIEW

In FY98, we had no Class A mishaps. Figure 1 displays our Class A Flight mishap history along with total flight hours since 1956. Figure 2 (on the next page) displays the Coast Guard aviation Class A flight mishap rates for the past fifteen years. Figures 1 and 2 illustrate how our Class A mishap performance has remains fairly constant over the last 15 years.

CLASS B FLIGHT MISHAPS

During an HU25 ferry flight, the engine spinner departed inflight. A large section of the spinner lodged in the engine bellmouth resulting in engine damage and impact damage to the fuselage, wing and horizontal stabilizer. Spinner failure/departure was caused by fatigue cracking as a result of corrosion. Attaching bolts failed due to overloading (and not fatigue) allowing the spinner to depart the spinner supports. Mishap review still in progress.

CLASS A FLIGHT MISHAP RATE PER 100,000 FLIGHT HOURS
FY84-FY98

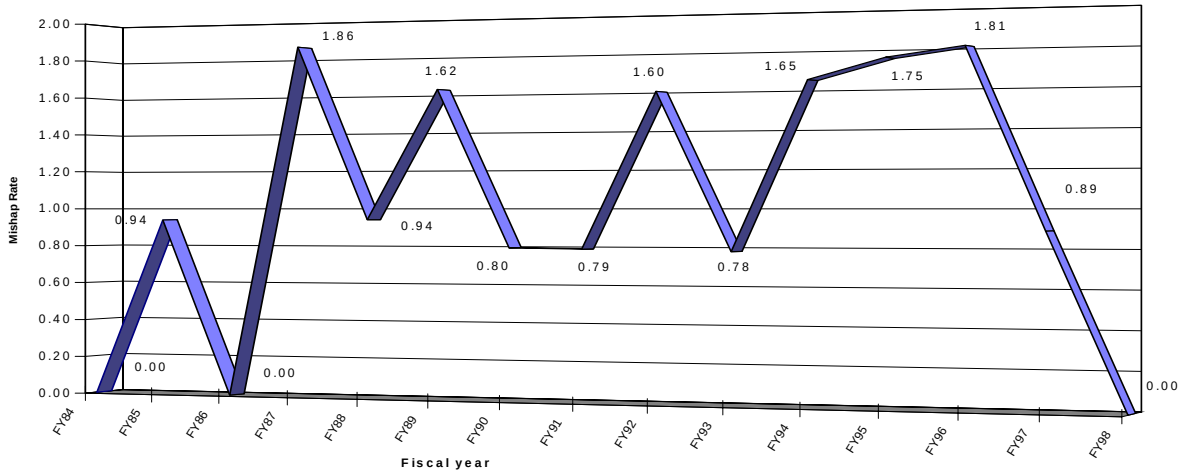


Figure 2

FLIGHT RELATED MISHAPS

Unless otherwise indicated, only flight mishaps are used for the annual statistics, instead of all mishaps (flight, flight-related and ground). This is the more traditional way of reporting annual numbers (within the aviation industry). The other categories of mishaps are still important and will be reviewed next.

Separating flight and flight-related mishaps emphasizes the importance of flight-related mishap reports as "hazard reports". We are trying to encourage the use of flight-related mishap reports as a method of reporting close calls and incidents that have value to the rest of the fleet. These reports can be used as mishap prevention tools. Also using only flight mishaps for the annual statistics eliminates some of the fluctuations in the mishap numbers due to reporting variations.

NOTE: Dollar values of mishap costs are actual annual costs -- not adjusted for inflation.

All mishaps and hazards to flight should be reported. The Aviation Safety Division urges you to view mishap messages as opportunities to learn and to share experiences. FSO's and Commands are encouraged to report all incidents, even those without damage or dollar cost. These incidents provide important heads up to other units and topics for hangar flying sessions. This is information that can be used as tools for mishap prevention.

BIRDSTRIKES/FOD/ENGINE FAILURES

Sixteen inflight engine failures, shutdowns or flameouts resulted in almost $1,750,000 in mishap

costs (not including FOD). Birdstrikes damaged five engines, four airframes, caused numerous aborted flights for a total of $621,127 in damages.

The thirteen FOD incidents reported this year resulted in $897,679 of damages. FOD caused $304,479 damage to six engines. At least eight of the reported incidents were the result of poor Q/A, loose parts or misplaced tools.

SHIP-HELO MISHAPS

There were twenty-nine mishaps reported in FY98 involving ship-helo operations totaling $148,860 in mishap costs. Ten of these mishaps were unique to the ship-helo environment (e.g., aircraft damage due to ship movement, HIFR mishaps, and tiedowns). The remaining nineteen were not the result of the ship-helo interface (e.g., chip lights, hydraulic problems, NMAC, indicator problems, etc.).

NEAR MIDAIR COLLISION

There were only eight near midair collisions (NMAC) reported in FY98. Five of these involved civilian aircraft and the remainder involved other military aircraft.

PHASE OF OPERATIONS

Most aviation mishaps occur during takeoff, landing, and low level operations, not enroute. In FY98, 57 mishaps (22% of reported flight mishaps) occurred during some phase of landing or takeoff and 64 mishaps (25%) were during low-level ops (drops, hoist, hover, autos, search, etc). Mission profiles that produce a larger number of takeoffs, landings or low-level operations increase the likelihood of a mishap. This is important to consider when making risk management decisions.

GROUND MISHAPS

Forty-six aviation ground mishaps were reported in FY98 for a total mishap cost of $423,694. Ground mishaps and associated costs are up almost 50% from years past. This may be partly due to increased reporting and awareness of hanger deck incidents, but there may be other reasons. Almost half (47%) of the ground mishaps reported, and 35% ($147,603) of the ground mishap costs resulted from incidents involving Ground Support Equipment (GSE), towing, fueling washing or jacking. Almost all (74%) ground mishaps listed some form of human factors as one of the cause factors. The wrong tool/equipment, the wrong part or incorrect procedures accounted for 40% of the ground mishaps and over 36% ($151,537) of the ground mishap costs.

Q/A and MAINTENANCE MISHAPS

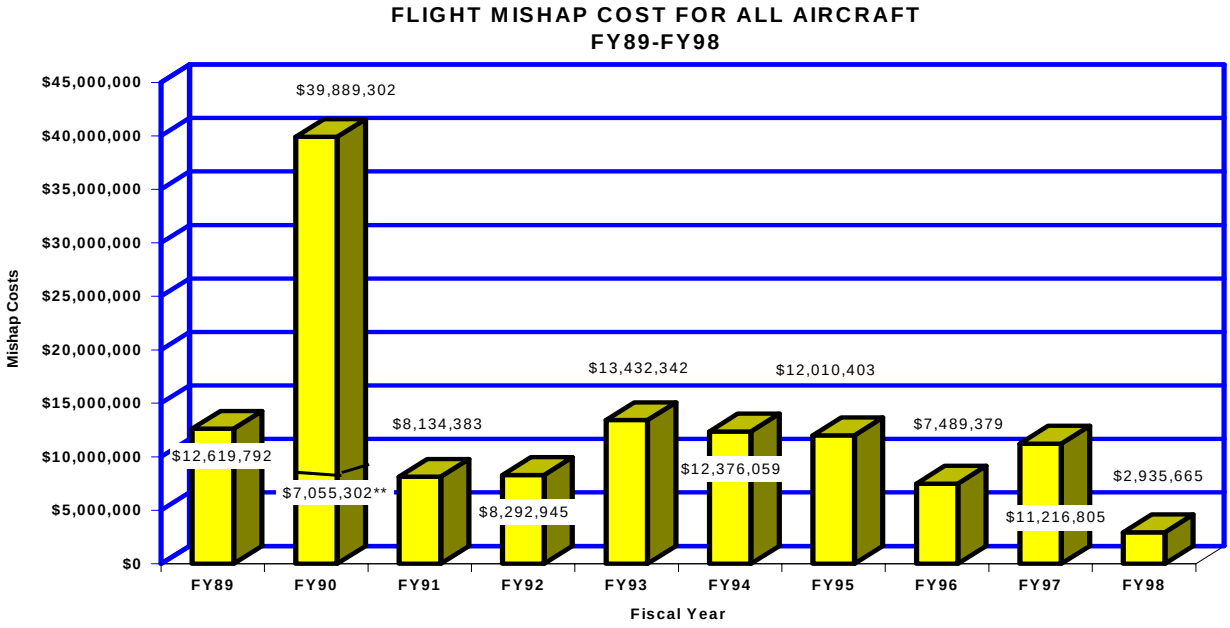
Fifty-four mishaps listed Q/A or maintenance as one of the cause factors. These mishaps included incomplete passdown, poor communications, inappropriate procedures, improperly followed procedures, or lack of supervisor review or Q/A. Eleven mishaps involved the wrong part, poor design or bad parts. Inattention, poor communications, inexperience/lack of training, workload or being rushed were listed as a cause factor in 70% of the maintenance related mishaps. *We are seeing an increase in mishaps as a result of crews feeling rushed (perceived or real) to get the job done. We are also seeing an increased in mishaps where those involved felt there were not enough personnel or enough experienced personnel to do the job properly.*

WEATHER

Weather was listed as a cause factor in nineteen mishaps and resulted in $436,245 damage. These incidents included electronic malfunctions due to moisture, flight control binding, and airframes damaged by wind or lightning strikes.

AVIATION INJURY

There were fourteen mishaps reported involving injury to CG aviation personnel. One third of these injuries involved improper procedures, the wrong tool, improper equipment or poor design of equipment. Injuries included two flight mechanics hurt by hoist cables, six rescue swimmers injured during hoisting, *one finger lost* during rotor head maintenance, two electrical shocks and one injury during towing.



* FY90 Costs includes the E2C Class A mishap ($33 Million Dollars).
** This cost represents the FY90 mishap cost *not* including the E2C Class A mishap.

Figure 3

SUMMARY INFORMATION

Coast Guard aviation flight mishap costs for FY98 were almost $3 million. Total Coast Guard aviation mishaps costs (flight, flight-related and ground) for FY98 were over $5 million. Figure 3 (on the previous page) shows total flight mishap costs for the last ten years. Mishap costs are down in part because there were no Class A mishaps in FY98. Tables 3 and 4 display the percentage of total mishaps, flight hours and mishap costs for each airframe. Note in Table 4 how the percentage of total mishaps and total mishap costs is similar to the percentage of total hours flown. Figure 4 displays FY98 mishap data. ABCD and ABC mishap data for the past five years is presented in Tables 5 and 6 on page 6.

FY98 FLIGHT MISHAP PERCENTAGES				
CLASS	MISHAPS	% of TOTAL MISHAPS	COST	% of TOTAL COST
A	0	0%	$0	0%
B	1	1%	$200,000	7%
C	54	20%	$2,290,044	78%
D	209	79%	$445,621	15%
TOTAL	264		$2,935,665	

Table 3

FY98 FLIGHT MISHAP PERCENTAGES						
CLASS	MISHAPS	% of TOTAL MISHAPS	COST	% of TOTAL COST	FLIGHT HOURS	% of FLIGHT HOURS
HH60	66	25%	$738,722	25%	25,218	22%
HH65	100	38%	$1,082,028	37%	47,962	43%
C130	40	15%	$450,620	15%	23,242	21%
HU25	58	22%	$664,245	23%	14,961	13%
VC4 &C20	0	0%	$0	1%	1,127	1%
TOTAL	264		$2,935,615		112,510	

Table 4

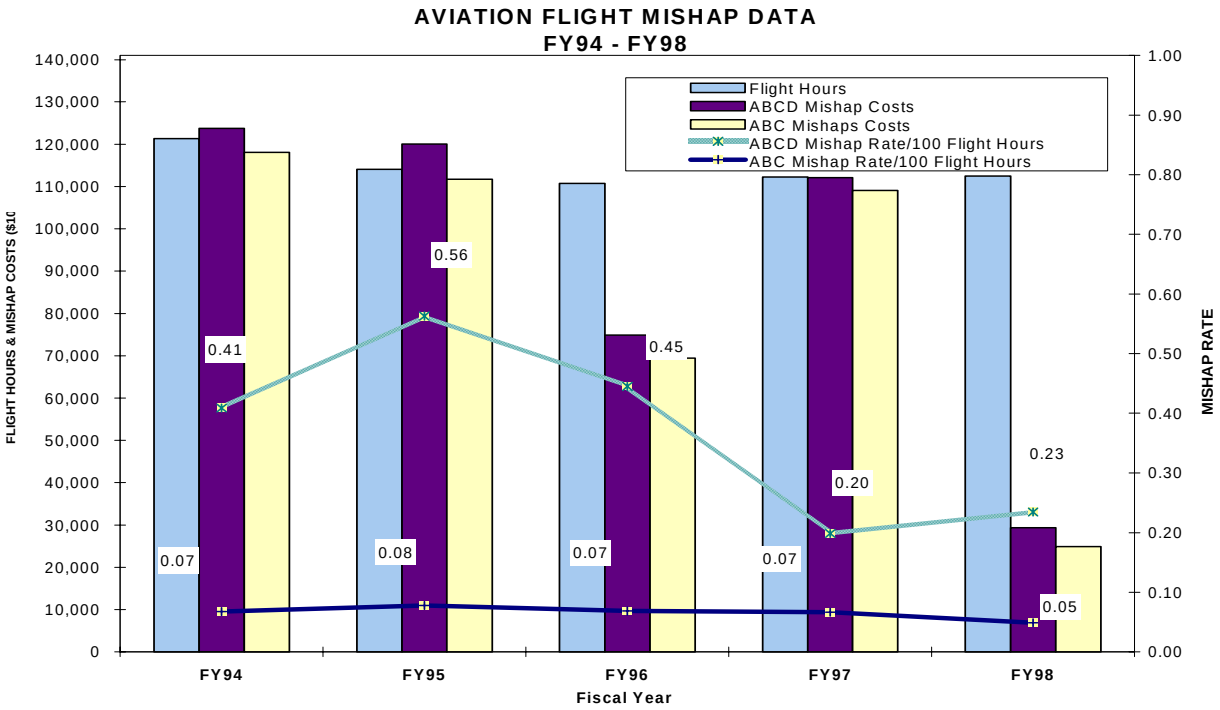


Figure 4

AVIATION FLIGHT MISHAP SUMMARY (A, B, C and D Mishaps)						
ABCD	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY94	496	$12,376,059	121,357	0.41	$24,952	$102
FY95	642	$12,010,403	114,052	0.56	$18,708	$105
FY96	493	$7,489,379	110,756	0.45	$15,191	$68
FY97	223	$11,216,805	113,452	0.20	$50,300	$99
FY98	264	$2,935,665	112,510	0.23	$11,120	$26

Table 5

AVIATION FLIGHT MISHAP SUMMARY (A, B and C Mishaps)						
ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY94	82	$11,806,220	121,357	0.07	$143,978	$97
FY95	89	$11,175,809	114,052	0.08	$125,571	$98
FY96	76	$6,939,890	110,756	0.07	$91,314	$63
FY97	40	$10,908,917	113,452	0.04	$272,723	$96
FY98	55	$2,490,044	112,510	0.05	$45,274	$22

Table 6

CLASS C and D MISHAPS

Class A and B mishap investigations can be seen as reactive safety, while Class C and D mishap reports are the proactive side of aviation safety. They provide an indication of where prevention efforts are failing, falling short or are inadequate. By highlighting these incidents, problems areas and hazards can be identified before a major mishap occurs. Class C and D mishap reporting highlights emerging trends and can be used an indicators to direct and focus mishap prevention efforts.

Unfortunately, there is often an imbalance between the efforts devoted to a mishap investigation and the efforts expended on incident analysis and hazard elimination. We must identify situations that can contribute to a mishap. If failures or hazards can be identified and removed from the system, mishaps can be prevented. These failures and hazards are the results of decisions or actions that may have occurred a long time before the mishap. Unsafe acts can be committed over a long period of time without consequences. However one day they will interact with the other deficiencies and a mishap will occur. Mishap investigations must center not only on the "inheritor of all system's defects"—the pilot---but they must identify the failures/hazards that led up to the mishap. Class C and D incident investigations should be used to highlight and eliminate hazards before a mishap occurs.

MISHAP REVIEWS BY AIRCRAFT

The following five pages contain mishap data for each major aircraft type.

FY98 HH60 MISHAPS		FLIGHT HRS =		25,218
	FLIGHT	FLT-REL	GROUND	TOTAL
CLASS A MISHAPS	0	0	0	0
CLASS A COST	$0	$0	$0	$0
CLASS A RATE	0.00	0.00	n/a	0.00
TOTAL MISHAPS	66	6	14	86
TOTAL COST	$738,772	$885	$76,497	$816,154
TOTAL RATE	0.26	0.02	n/a	0.34
COST/MISHAP	$11,194	$148	$5,464	$9,490
A/B/C MISHAPS	13	3	2	18
A/B/C COST	$636,541	$382	$52,871	$689,794
A/B/C RATE	0.05	0.01	n/a	0.07
COST/MISHAP	$48,965	$127	$26,436	$38,322

Table 7

FY98 HH65 MISHAPS		FLIGHT HRS =		47,962
	FLIGHT	FLT-REL	GROUND	TOTAL
CLASS A MISHAPS	0	0	0	0
CLASS A COST	$0	$0	$0	$0
CLASS A RATE	0.00	0.00	n/a	0.00
TOTAL MISHAPS	100	10	13	123
TOTAL COST	$1,082,028	$60,000	$292,271	$1,434,299
TOTAL RATE	0.21	0.02	n/a	0.26
COST/MISHAP	$10,820	$6,000	$22,482	$11,661
A/B/C MISHAPS	19	2	4	25
A/B/C COST	$954,254	$60,000	$284,000	$1,298,254
A/B/C RATE	0.04	0.00	n/a	0.05
COST/MISHAP	$50,224	$30,000	$0	$51,930

Table 8

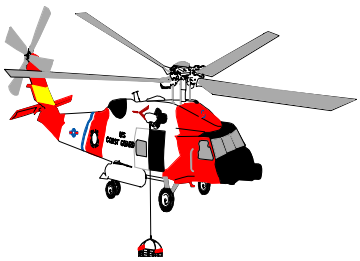
FY98 HC130 MISHAPS		FLIGHT HRS =		23,242
	FLIGHT	FLT-REL	GROUND	TOTAL
CLASS A MISHAPS	0	0	0	0
CLASS A COST	$0	$0	$0	$0
CLASS A RATE	0.00	0.00	n/a	0.00
TOTAL MISHAPS	40	3	4	47
TOTAL COST	$450,620	$5,356	$5,210	$461,186
TOTAL RATE	0.17	0.01	n/a	0.20
COST/MISHAP	$11,266	$1,785	$1,303	$9,812
A/B/C MISHAPS	10	0	0	10
A/B/C COST	$364,656	$0	$0	$364,656
A/B/C RATE	0.04	0.00	n/a	0.04
COST/MISHAP	$36,466	$0	$0	$36,466

Table 9

FY98 HU25 MISHAPS		FLIGHT HRS =		14,961
	FLIGHT	FLT-REL	GROUND	TOTAL
CLASS A MISHAPS	0	0	0	0
CLASS A COST	$0	$0	$0	$0
CLASS A RATE	0.00	0.00	n/a	0.00
TOTAL MISHAPS	58	3	10	71
TOTAL COST	$664,245	$1,744,800	$48,391	$2,457,436
TOTAL RATE	0.39	0.02	n/a	0.47
COST/MISHAP	$11,453	$581,600	$4,839	$34,612
A/B/C MISHAPS	13	3	3	19
A/B/C COST	$534,593	$1,744,800	$36,084	$2,315,477
A/B/C RATE	0.09	0.02	n/a	0.13
COST/MISHAP	$41,123	$581,600	$12,028	$121,867

Table 10

HH-60J MEDIUM RANGE RECOVERY (MRR)



The HH-60J flew 25,218 hours (22% of the total flight hours) and reported 66 flight mishaps (25% of total reported flight mishaps). Mishaps costs represented 25% of the total mishap costs ($738,722). The HH-60J mishap rate for FY98 was 0.26.

HH-60J Flight Mishaps for FY98

Aircraft	Class	No. Mishaps	Cost
HH-60J	A	0	$ 0
	B	0	$ 0
	C	13	$ 636,541
	D	53	$ 102,231
Totals		**66**	**$ 738,772**

Table 11

HH60 ABCD	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	HH60 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY94	82	$948,757	23,040	0.36	$11,570	$41	FY94	19	$806,299	23,040	0.08	$42,437	$35
FY95	116	$1,370,380	22,938	0.51	$11,814	$60	FY95	20	$1,157,498	22,938	0.09	$57,875	$50
FY96	106	$1,093,247	24,672	0.43	$10,314	$44	FY96	24	$949,050	24,672	0.10	$39,544	$38
FY97	40	$782,353	25,081	0.16	$19,559	$31	FY97	9	$756,105	25,081	0.04	$84,012	$30
FY98	66	$738,772	25,218	0.26	$11,194	$29	FY98	13	$636,541	25,218	0.05	$48,965	$25

Table 12

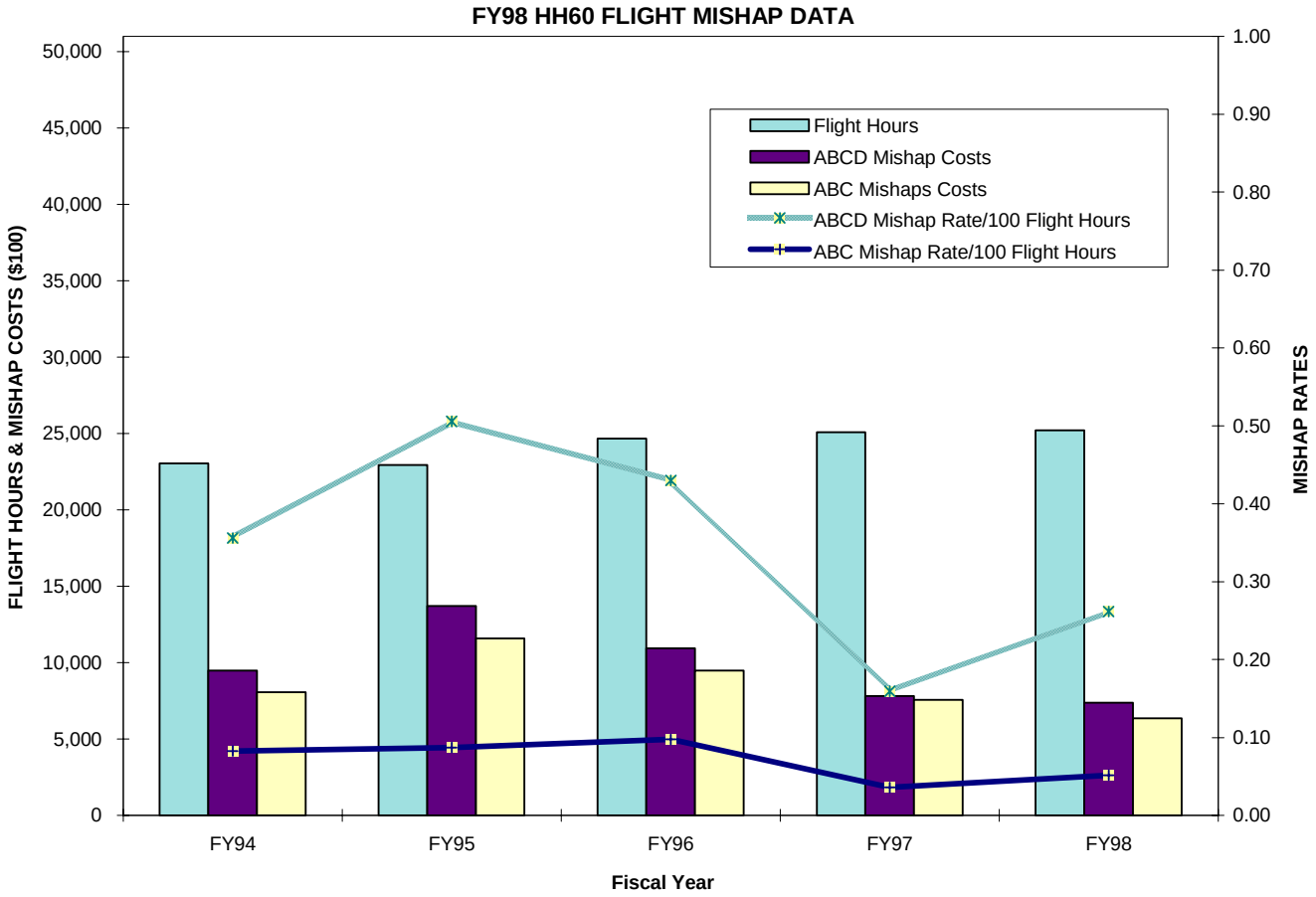


Figure 5

HH-65A SHORT RANGE RECOVERY (SRR)

The HH-65A flew 47,962 hours (43% of total flight hours) the most of all the airframes and reported the most mishaps (100 mishaps, 38% of the reported flight mishaps). Although its mishap costs were down in FY98, the HH-65A had the highest mishap costs.

HH-65A Flight Mishaps for FY98

Aircraft	Class	No. Mishaps	Cost
HH-65A	A	0	$ 0
	B	0	$ 0
	C	19	$ 954,254
	D	81	$ 127,774
Totals		**100**	**$1,082,028**

Table 13

HH65 ABCD	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	HH65 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY94	251	$9,932,782	49,074	0.51	$39,573	$202	FY94	34	$9,674,568	49,074	0.07	$284,546	$197
FY95	334	$9,067,411	48,224	0.69	$27,148	$188	FY95	31	$8,699,078	48,224	0.06	$280,615	$180
FY96	249	$4,089,497	48,920	0.51	$16,424	$84	FY96	18	$3,853,719	48,920	0.04	$214,096	$79
FY97	117	$10,044,581	49,352	0.24	$85,851	$204	FY97	21	$9,877,588	49,352	0.04	$470,361	$200
FY98	100	$1,082,028	47,962	0.21	$10,820	$23	FY98	19	$954,254	47,962	0.04	$50,224	$20

Table 14

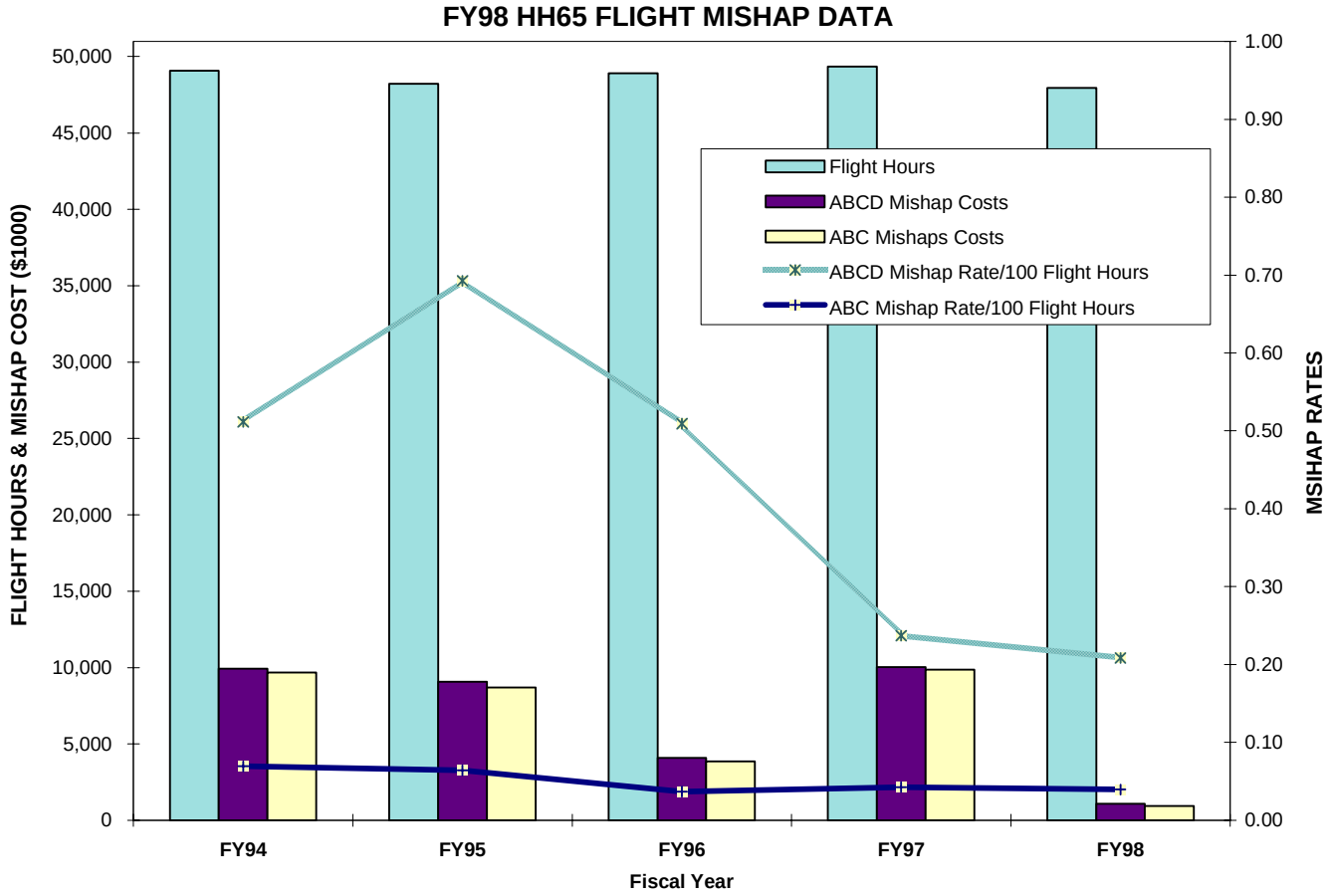
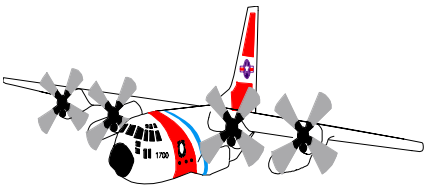


Figure 6

HC-130H LONG RANGE SEARCH (LRS)



The HC-130H flew 23,242 hours (21% of total flight hours) and reported the fewest flight mishaps (40 mishaps, 15% of the reported flight mishaps). The HC-130H mishap rate was 0.17 for FY98. The HC-130H had the lowest mishap costs ($450,620) of all the airframes in FY98 (only 15% of the total flight mishap costs).

HC-130 Flight Mishaps for FY98

Aircraft	Class	No. Mishaps	Cost
HC-130	A	0	$ 0
	B	0	$ 0
	C	10	$ 364,656
	D	30	$ 85,964
Totals		**40**	**$ 450,620**

Table 15

C130 ABCD	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	C130 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY94	51	$553,044	23,130	0.22	$10,844	$24	FY94	11	$492,907	23,130	0.05	$44,810	$21
FY95	67	$538,212	22,834	0.29	$8,033	$24	FY95	15	$464,353	22,834	0.07	$30,957	$20
FY96	54	$727,838	21,611	0.25	$13,478	$34	FY96	22	$673,330	21,611	0.10	$30,606	$31
FY97	21	$112,062	23,417	0.09	$5,336	$5	FY97	5	$93,501	23,417	0.02	$18,700	$4
FY98	40	$450,620	23,242	0.17	$11,266	$19	FY98	10	$364,656	23,242	0.04	$36,466	$16

Table 16

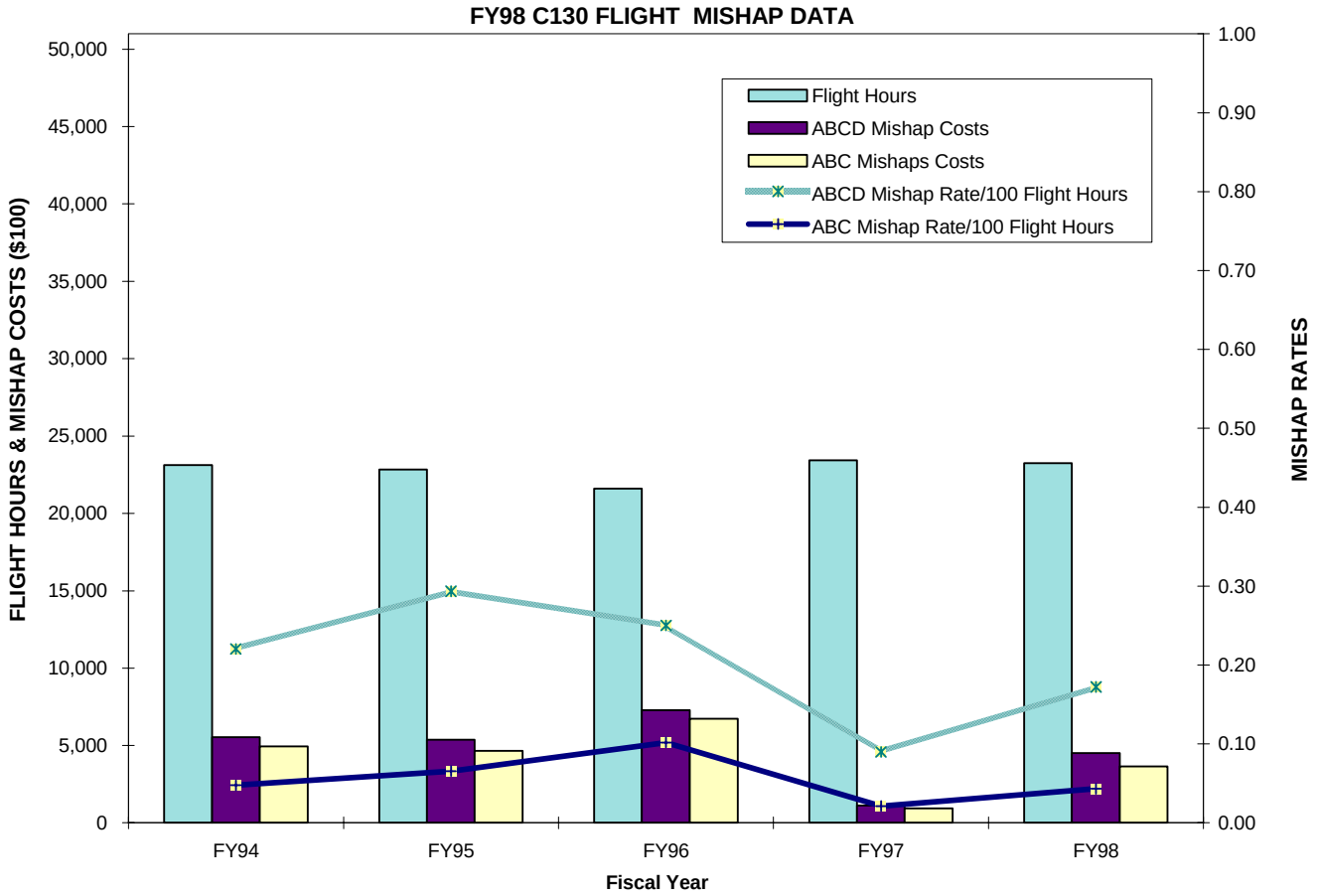
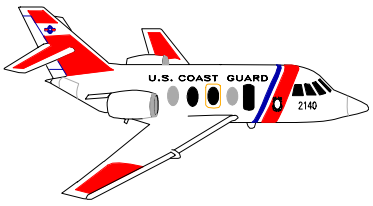


Figure 7

HU-25 MEDIUM RANGE SEARCH (MRS)



The HU-25 (all models) flew the fewest hours (14,961 hours, only 13% of the total flight hours)) again this year and reported 58 mishaps (22% of total mishaps). The Falcon had the highest mishap rate (0.39 per 100 flight hours) of all the airframes.

HU-25 Flight Mishaps for FY98

Aircraft	Class	No. Mishaps	Cost
HU-25	A	0	$ 0
	B	1	$ 200,000
	C	12	$ 334,593
	D	45	$ 129,652
Totals		**58**	**$ 664,245**

Table 17

HU25 ABCD	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR	HU25 ABC	NO. MISHAPS	COST	FLIGHT HOURS	MISHAPS/ 100 FLIGHT HOURS	COST/ MISHAP	COST/ FLIGHT HOUR
FY94	101	$685,132	21,278	0.47	$6,783	$32	FY94	15	$578,406	21,278	0.07	$38,560	$27
FY95	122	$1,032,345	17,564	0.69	$8,462	$59	FY95	23	$854,880	17,564	0.13	$37,169	$49
FY96	82	$378,797	14,438	0.57	$4,619	$26	FY96	11	$263,791	14,438	0.08	$23,981	$18
FY97	45	$217,155	14,460	0.31	$4,826	$15	FY97	4	$125,307	14,460	0.03	$31,327	$9
FY98	58	$664,245	14,961	0.39	$11,453	$44	FY98	13	$534,593	14,961	0.09	$41,123	$36

Table 18

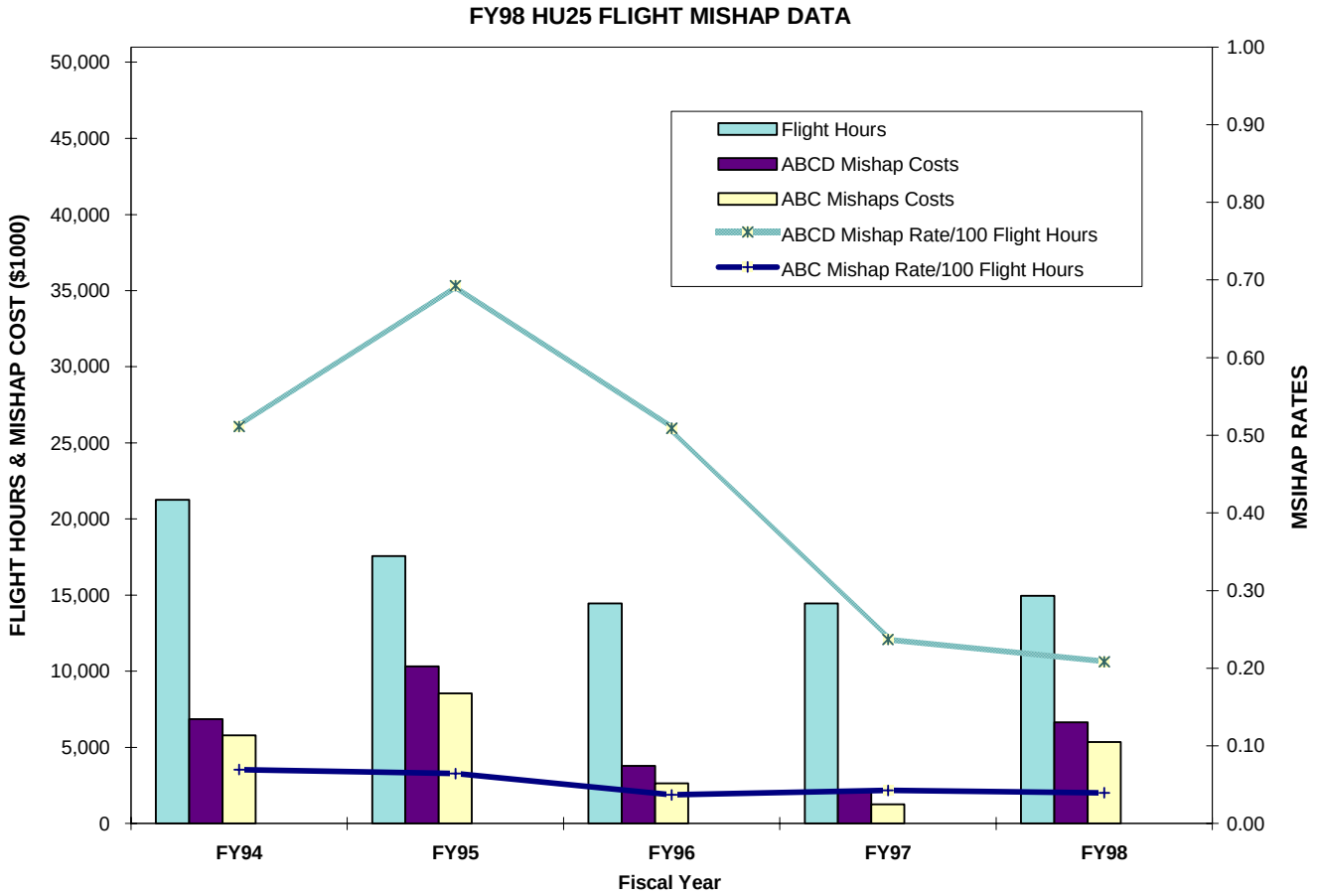


Figure 8

VC4 and C20 AIRCRAFT

The VC4 and C20 aircraft flew a combined total of 1,127 flight hours and reported no flight mishaps.

PILOT FLIGHT TIME

Table 19 displays the flight time for Pilots in Command (PIC) and Co-pilots (CP) involved in Class A and B mishaps. Most PIC's have over 2,000 hours total flight time. However, their flight experience is often split between aircraft and most have less than 1,500 hours total flight time in the mishap aircraft type. Copilots are not as experienced, generally with less than 2,000 hours total flight time and less than 1,500 hours flight time in mishap aircraft type.

The term CP as used on this page refers to the pilot-not-in-command. It does not refer to the Copilot designation

Table 20 displays similar information about pilot-at-the-controls (PAC) and pilot-not-at-the-controls (PNC) flight time. Most PAC's have over 2,000 hours total flight time, but less than 1,500 hours flight time in the mishap aircraft type. PNC's are not as experience with less than 2,000 hours total flight time and less than 1,500 hours flight time in mishap aircraft type.

PILOT-IN-COMMAND/COPILOT (PIC/CP) EXPERIENCE (CLASS A & B MISHAPS FY89-FY98)

TOTAL FLIGHT TIME			TOTAL FLIGHT TIME IN MISHAP AIRCRAFT TYPE		
HOURS	PIC	CP	HOURS	PIC	CP
0-500	0	1	0-500	4	8
501-1000	2	4	501-1000	7	6
1001-1500	5	7	1001-1500	8	5
1501-2000	4	4	1501-2000	6	0
2001-3000	6	3	2001-3000	0	2
3001-4000	5	4	3001-4000	0	0
OVER 4001	5	0	OVER 4001	0	0
UNKNOWN	1	1	UNKNOWN	3	3
TOTAL MISHAPS	*28	*24	TOTAL MISHAPS	*28	*24

*Four mishaps involved single piloted mission.

Table 19

In reviewing the flight time data for the pilots involved in Class A or B mishaps (FY89-FY98), the following was noted. This is just a summary and does not reveal any trends because of the small number of mishaps (only 28).

- Only two mishaps in the last ten years involved pilots with over 2,000 hours in type.
- The PIC outranked the CP in eleven mishaps and the PIC and CP were of equal rank in eleven mishaps,
- CP was at the controls in only six mishaps.
- In two thirds of the mishaps, the PIC had more total flight time and more time in type than the CP.
- The CP had more time in type and more total flight time than the PIC in seven mishaps.
- In nine mishaps, the PAC outranked the PNC and in eleven mishaps, they were of the same rank.
- In ten mishaps, the PNC had more time in type and more total flight time than the PAC. And in ten mishaps , the PAC had more time in type and more total flight time than the PNC in ten mishaps.
- The PAC had less time in type and less total flight time then the PNC in eight mishaps
- In nine mishaps, the PAC/PIC had more time in type and more total flight time than the PNC/CP.

PILOT-AT-CONTROLS/PILOT-NOT-AT-CONTROLS (PAC/PNC) EXPERIENCE (CLASS A & B MISHAPS FY89-FY98)

TOTAL FLIGHT TIME			TOTAL TIME IN MISHAP AIRCRAFT TYPE		
HOURS	PAC	PNC	HOURS	PAC	PNC
0-500	0	1	0-500	4	8
501-1000	2	4	501-1000	7	5
1001-1500	4	6	1001-1500	11	4
1501-2000	6	4	1501-2000	3	2
2001-3000	6	3	2001-3000	0	2
3001-4000	5	4	3001-4000	0	0
OVER 4001	4	1	OVER 4001	0	0
UNKNOWN	1	1	UNKNOWN	3	3
TOTAL MISHAPS	*28	*24	TOTAL MISHAPS	*28	*24

*Four mishaps involved single piloted missions.

Table 20

CLASS A AND B MISHAP SUMMARY

Tables 21 and 22 summarize the Class A and B flight mishaps for the last ten years. Mishaps are seldom, if ever the result of a single cause. They are a combination of several cause factors. When viewed alone, each cause factor often appears insignificant. A sequence of seemingly unrelated events in combination with other events can result in a mishap.

Tables 21 and 22 also illustrate how human factor mishaps keep happening. Almost all aircraft mishaps can be traced to a human failure. Often the failure is far removed from the direct operation of the aircraft (tower personnel, manufacturer, etc.). Effective accident prevention must include supervisory and support aspects of human involvement in aircraft operations, not just those directly involved (maintenance and flight crews).

CLASS A MISHAP SUMMARY
FY89-FY98

DATE	ACFT	SUMMARY	CAUSE FACTORS
JAN 1989	HH65	Uncontained engine power turbine (PT) wheel failure, during daylight search, aircraft ditched.	Mechanical, CRM
AUG 1989	HH65	Aircraft impacted ground while attempting to land at unimproved dirt strip for night Medevac. Outside visual reference lost due to dust cloud generated by rotorwash.	Supervisory & Aircrew Error
AUG 1990	E2C	Returning from night LE patrol, aircraft developed wing fire and crashed short of runway while on final approach.	Fire
AUG 1991	HH65	During daylight, low speed photo pass, aircraft experienced uncommanded left yaw and impacted ice.	Aircrew Error
JAN 1992	C130	Uncontained failure of # 3 reduction gearbox shortly after takeoff. Prop and front half of gearbox departed nacelle, struck fuselage resulting in explosive decompression and severing of MLG hydraulic line. Aircraft landed without further damage.	Overhaul Procedures, Material
MAR 1992	HH65	Aircraft impacted water during practice MATCH to water at night.	Fatigue, Disorientation, CRM, Supervisory & Aircrew Error
AUG 1993	HH65	During daylight delivery of ATON personnel and equipment, aircraft crashed while landing on elevated helipad.	Aircrew Error, CRM, Training
JULY 1994	HH65	Aircraft impacted side of cliff in low visibility during night SAR mission to assist S/V aground.	Communications, Situational Awareness, CRM, Aircrew Error
AUG 1994	HH65	Hardlanding during daylight practice autorotation, aircraft impacted ground, slid and rolled on side.	Aircrew Error, CRM, Training
JAN 1995	HH65	During night pollution surveillance flight, with two MSO personnel on board, aircraft experienced engine fluctuations. While analyzing problem, aircraft flown into water.	Situational Awareness, CRM, Aircrew Error, Mechanical
AUG 1995	HH65	During daylight flight, deployed helo experienced rapid left yaw while conducting left pedal turn in a hover. Aircraft accelerated through wind line, spin could not be countered. Aircraft impacted water.	Design, CRM, Aircrew Error, Situational Awareness, Training
DEC 1995	RG-8	While conducting patrol, sensor operator and pilot detected smoke in cockpit. Pilot determined engine was on fire, secured engine and crew bailed out (as required by emergency procedures). Crew was recovered within an hour after entering water. Aircraft was lost at sea.	Cause of engine fire unknown, Training, Design
APR 1996	HH65	At end of 5-hour mission, pilot and aircrewman were practicing hover maneuvers over taxiway. During third hover, aircraft entered left turn, pilot was unable to counter. Acft continued spinning left and impacted ground.	Aircrew & Supervisory Error, Fatigue, Procedures, Design
JUN 1997	HH65	Night SAR in high winds and seas for sailboat taking on water. Shortly after arriving on scene, on scene resources lost comms with aircraft. Crew of four did not egress and the helicopter sank in 8,500 feet of water.	Mishap Review in Process

Table 21

CLASS B MISHAP SUMMARY
FY89-FY98

DATE	ACFT	SUMMARY	CAUSE FACTORS
OCT 1988	HH65	TRB spar debonded causing TRB separation during night approach to a boat. Fenestron sustained extensive gouge damage, tail section and drive train components damaged.	Material, Manufacture, Aircrew, Procedures, Communications, CRM,
MAR 1990	HH65	Power increase on #1 engine was misanalyzed and flight terminated w/autorotation and hardlanding in sugar cane field. #1 fuel control failed, driving engine into overspeed and #2 engine decelerated to compensate for # 1 engine overspeed.	Supervisory & Aircrew Error, Training, Procedures, Material, Fixation, CRM,
MAR 1991	HH65	While delivering passengers to Navy vessel, pilot pulled excessive collective overtorquing MGB and overspeeding both engines. Pilot was mistakenly advised to return to CG Cutter. Aircraft experienced a hard landing upon return to CG cutter.	Supervisory & Aircrew Error, Training, CRM, Situational Awareness, Procedures
MAY 1992	HU25	Aircraft landed with left main landing gear up after MLG failed to extend. MLG unlock control cable separated, preventing MLG door from opening and stopping landing gear sequence.	Material, Aircrew Error, CRM, Procedures,
MAY 1992	HH60	During live litter hoist from an RHI, litter cables failed, dropping the litter approximately 30 ft to the water.	Procedures, Supervisory, Maintenance
DEC 1992	C130	Engine turbine wheel failed inflight. Damage limited to engine. Failure attributed to material fatigue and manufacturing processes.	Material, Procedures, Manufacture
MAR 1993	HH65	At end of offshore SAR, pilot misdiagnosed and improperly managed #2 engine indicating system failure and secured #2 engine. Situation further aggravated by series of uncoordinated inputs by both pilots. FM recognized situation, advanced FFCL, allowing the remaining engine to regain power.	Mechanical, Aircrew Error, CRM, Training, Procedures
MAY 1993	HH65	During instrument approach to hover over water, rotorwash engulfed aircraft in salt spray. Pilots lost visual contact with surface resulting in MGB overtorque and overspeeding both engines during ITO.	Procedures, Darkness, Environment, Aircrew, CRM, Disorientation
AUG 1993	HH3	During flood relief support, MRBs contacted hangar, as crew completed turn into parking space. Crew had parked in same position several times.	CRM, Aircrew, Situational Awareness, Procedures
MAR 1994	HH65	Fenestron contacted runway during practice single engine landing for annual Stan check ride.	Awareness, Training, Supervisory & Aircrew
SEPT 1994	HU25 FltRel	Crew dropped a DMB to aid relocation of lone raft at sea and departed scene for fuel. Unknown to crew, DMB struck a female in the raft. Rafters were later rescued, female underwent surgery and recovered.	Supervisory & Aircrew Error, Procedures
APR 1995	HH60	Returning along coast from training flight in VFR conditions, crew felt abnormal vibration. Vibrations were so severe, pilots had difficulty reading instruments and controlling aircraft. Aircraft landed immediately on boulder-strewn beach damaging the aircraft. MRB tipcap departed inflight.	Material Failure
JUL 1995	HH65	Deployed aircraft taxied into side of Navy hangar. Five navy personnel inside hangar received minor shrapnel injuries. Aircraft sustained sudden stoppage damage and shrapnel damage.	Aircrew & Supervisory Error, Procedures, CRM, Distractions, Judgement
AUG 1995	HH65	PAC was attempting to park acft between two acft. MRB struck chain link fence. Two other acft and several buildings sustained shrapnel damage.	CRM, Aircrew Error, Situation Awareness, Distractions
DEC 1996	HH60 FltRel	Acft was diverted from a routine training flight to assist F/V reporting taking on water and sinking. Two PIW were hoisted using a basket recovery, third PIW was recovered using rescue swimmer direct deployment. The victim's survival suit was improperly donned and filled with water. The added weight caused the victim to slip through the strop. FM and RS encountered difficulties trying to bring the victim into the cabin. The victim slipped out of the strop and fell to the water.	Environment, Procedures, Design, Equipment,
JAN 1997	HH65 FltRel	Acft was launched on early morning SAR to assist a F/V aground and breaking up. First victim was located lying face down in debris. The unconscious, unresponsive victim had improperly donned a PFD. As the victim was being brought into the cabin, the victim began to slip out of the quick-strop. FM and RS tried to hold the victim, but he slipped out of the PFD and the quick-strop.	Procedures, aircrew, Training, Design
MAR 1998	HU25	Fan spinner departed in flight. Large section of fan spinner lodged in engine bellmouth, resulting in engine damage and damage to fuselage, wing and horizontal stabilizer	Mishap review in process

Table 22

DOD CLASS "A" MISHAP RATES COMPARISON

Class A mishap rates for the DOD Services are compared in Tables 23 and 24 (on the next page). When reviewing the DOD rates and comparing them to the Coast Guard, we need to consider the effect that our small number of flight hours has on our mishap rate. While one Class A mishap can greatly impact the Coast Guard mishap rate, one more or one less mishap would have little effect on the DOD rates. Table 24 illustrates the effect of one-more or one-less mishap on each Service's mishap rate. (NOTE: U.S. Navy data includes U.S. Marine Corps mishaps).

FY97/FY98 CLASS A AVIATION MISHAP RATES FOR ALL SERVICES

Class A Rates	FY97 USCG	FY97 USAF	FY97 USA	FY97 USN	FY98 USCG	FY98 USAF	FY98 USA	FY98 USN
Total Class A Rate	0.88	1.37	1.26	1.77	0.00	1.13	1.34	2.40
Fixed Wing	0.00	1.44	0.78	1.58	0.00	1.07	0.00	2.56
Rotary Wing	1.34	0.00	1.33	2.34	0.00	3.35	1.59	1.97
HC-130	0.00	0.71	N/A	0.00	0.00	0.00	N/A	0.00
HH-60J	0.00	0.00	0.92	3.77	0.00	3.76	N/A	3.61

Table 23

EFFECT OF ONE-MORE OR ONE-LESS CLASS A MISHAP ON FY98 MISHAP RATES

	FY98 Class A Mishaps	FY98 Flight Hours	FY98 Class A Rate	Plus One Mishap	Minus One Mishap
USCG	0	112,510	0.00	0.89	0.00
USAF	24	2,125,450	1.13	1.18	1.08
USA	12	897,870	1.34	1.45	1.23
USN	36	1,500,982	2.40	2.47	2.33

Table 24

FY99 -- FLIGHT SAFETY PROGRAM

To improve future aviation operational performance and safety, we are working on the following for FY99:

Training Courses

- Traditional FSO training will continue with the Navy at NPGS Monterey, CA.
- COs will continue to receive the Command Safety Course at NPGS Monterey, CA.
- Advanced aviation safety training for selected FSO's.
- FY98 FSO Annual Training was held in April 98.

Air Station Visits

- The G-WKS safety visit/program audits are now triennial and focus on both FSO/GSO development.
- Twelve air station visits are scheduled for FY99.
- Units may request unscheduled or informal visits and safety training at any time.

CRM

- We reached our goal of providing initial CRM training to 100% of Coast Guard pilots and crews.
- FSO's received instructor training for the CRM Refresher Course during the April 98 FSO Annual Training.

MRM

- Introductory briefing on Maintenance Resource Management (MRM) was presented to the EO's, Leading Chiefs, ATTAC and ARSC during first quarter of FY99.
- Watch for more on this during the Spring of FY99.
- Expect decision on how this will be incorporate into CG aviation programs during CY99.

Human Factors Study

- The R&D project to study effects of sleep loss

and fatigue on Coast Guard aircrews is ongoing.

- Data collection is completed and the final report is being written.
- The project is a partnering effort between CG aviation, the CG R&D Center and the FAA Civil Aeronautical Institute (CAMI).
- Guidelines for adopting unit or crew endurance (rest) plans are available upon request.

Reverse Cycle OPS (RCO)

- Current crew rest and scheduling guidelines are inadequate for today's CG mission.
- In response, a second R & D effort has been proposed to explore the effects of night vision device and reverse cycle (night) operations. Planning is still in the preliminary stages.
- The study may involve observing subjects in the controlled environment of a simulator, as well as to capturing data from the operational environment.

Pilot Flight Time Data

- To better understand and manage pilot flight experience at air stations, the **AMMIS** database has been programmed to track total flight time and flight time by aircraft type.
- A screen has been added to **AMMIS** and units should update information captured by this screen for each pilot.
- All pilots should take the time to have their flight time for all aircraft flown entered in AMMIS.
- **AMMIS** will automatically update a pilot's flight time each time blue sheet information is entered.

VADR (CVR/FDR)

- Installation of state-of-the-art Voice and Data Recorder (VADR) "boxes" is completed for all CG helicopters. The Coast Guard is the first service with recorders on their entire fleet.
- VADR will be downloaded in conjunction with DOD VADR download facilities. VADR is capable of holding the last 30 minutes of voice and last 4 hours of flight data on "crash-proof" data chips.
- Computer animated simulation of mishaps and retrieval of voice and data from these "boxes" will greatly enhance mishap investigation and loss control.
- A Joint Service MOU (Army, Navy and Air Force) promoting inter-service cooperation and support for handling, analyzing and sharing the data has been signed.
- VADR downloads were used in two mishap investigations in FY98.
- In addition, VADR information has proven invaluable as a maintenance troubleshooting tool. Msg DTG 232036ZNOV98 establishes procedures for using the HH60J/HH65A VADR systems for non mishap situations.

*AVI*ation *A*ccident *TR*acking *S*ystem (AVIATRS)

- The aviation safety database (***AVIATRS***) resides on the CG Standard Workstation III
- Aviation mishap messages are loaded from E-mail message traffic into **AVIATRS**,
- **AVIATRS** captures all the information on the mishap message. All information reported in the message can now be search and retrieved.
- Use of the new message format has been excellent.
- Updates will be presented each year at the Annual FSO Annual Training.
- As units transition to SWIII, please Contact WKS-1 for new mishap message format.

VR:
Your Coast Guard Aviation Safety Staff

CDR P. Scott Neeld 202-267-2971
(PNEELD@USCG.COMDT.MIL)
Miss Cathie Zimmerman 202-267-2966
(CZIMMERMAN@USCG.COMDT.MIL)
LCDR Smitty Kalita 202-267-2972
(SKALITA@USCG.COMDT.MIL)
LT Tim McGuire 202-267-1884
(TMCGUIRE@USCG.COMDT.MIL)

Hail and Farewell: WKS-1 will say farewell to CDR Neeld this summer. We welcome LCDR Smitty Kalita to the staff (to fill the vacancy left by CDR Hubbard.